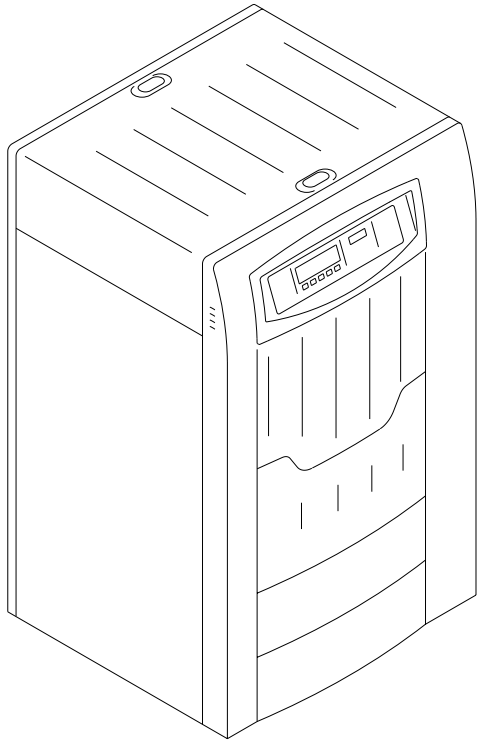
Publication No. 5B6342
January 1996
Supersedes October 1995

# DIAGNOSTICS
# for the
# *Kodak X-Omat* 5000 RA PROCESSOR



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This equipment includes parts and assemblies sensitive to damage from electrostatic discharge. Use caution to prevent damage during all service procedures.

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# Section 1: Error Codes

## Introduction

**Overview**

The software on the 5000 MICROPROCESSOR BOARD controls and monitors the operation of the PROCESSOR and continually checks for errors. When an error occurs, a description of the error is displayed on the DISPLAY PANEL.

When 2 or more errors occur together, all the errors are displayed, but only 1 error is visible on the DISPLAY PANEL at a time. The error with the highest priority is displayed first. You can scroll through the list to view the other errors.

An error log on the 5000 BOARD records the last 100 errors that have occurred and the number of times each error has occurred.

3 types of errors can occur:

- Fatal
- Non-Fatal
- Warning

**Fatal and Non-Fatal Errors**

Only qualified service personnel should repair both fatal and non-fatal errors.

- Most fatal errors prevent optimum film processing.
- Most non-fatal errors do not prevent optimum film processing.

**Important**

When you service a PROCESSOR with a fatal or non-fatal error and you check an electrical component or BOARD, also check all the:

- connections and CABLES for the component or BOARD
- voltages from the POWER SUPPLY for the component or BOARD

**Warning Errors**

Operators can repair warning errors. Normally, you can feed film into a PROCESSOR when a warning error is displayed.

**READY LED**

If any error prevents optimum film processing, the READY LED will de-energize. When the LED de-energizes, you can feed film into the PROCESSOR but the image quality may not be correct. Kodak recommends that you do not process film when the LED is de-energized.

# All Errors

**Important**

When you check an electrical component or BOARD, also check all the:

- connections and CABLES for the component or BOARD
- voltages from the POWER SUPPLY for the component or BOARD

When you check a SOLID STATE RELAY, use the tests in the Appendix to determine the source of the malfunction.

**ESD**

Possible damage from electrostatic discharge.

# Fatal Errors

| Code | Description | Possible Malfunction | Action |
|---|---|---|---|
| **E001** | Microcontroller error | 5000 BOARD | Install a new BOARD. |
| **E002** | Dryer over maximum temperature<br>**Note**<br>The maximum temperature is 79°C (175°F).<br>Normally, the DRYER AC OVERTEMPERATURE THERMOSTAT opens before the DRYER reaches this temperature. | DRYER BLOWER | When the DRYER HEATER energizes, the DRYER BLOWER should energize. Check:<br>• RELAY K1<br>• DRYER BLOWER |
| | | DRYER THERMISTOR | Check that the resistance at 25°C (77°F) is approximately 10 KW. |
| | | SOLID STATE RELAY U1 that controls the DRYER HEATER | Check U1. |
| | | 5000 BOARD | Install a new BOARD. |
| **E003** | Loss of film accumulator data link | No communication with the 6000 BOARD | De-energize and energize the PROCESSOR to automatically reset the:<br>• MICROPROCESSOR on the 5000 BOARD<br>• MICROPROCESSOR on the 6000 BOARD |
| | | BOOT PROM U6018 on the 6000 BOARD | Install a new U6018. |
| | | 6000 BOARD | Install a new BOARD. |
| | | 5000 BOARD | Install a new BOARD. |
| **E004** | Inoperative transport | See E041. | |
| **E007** | Developer thermistor failure | The DEVELOPER HEATER is disabled when this error occurs. | |
| | | DEVELOPER THERMISTOR | Install a new THERMISTOR. |
| **E008** | Fixer thermistor failure | The FIXER HEATER is disabled when this error occurs. | |
| | | FIXER THERMISTOR | Install a new THERMISTOR. |
| **E009** | Dryer thermistor failure | The DRYER HEATER is disabled when this error occurs. | |
| | | DRYER THERMISTOR | Install a new THERMISTOR. |
| **E010** | Analog-to-digital converter failure | All 3 HEATERS are disabled when this error occurs. | |
| | | 5000 BOARD | Install a new BOARD. |

| Code | Description | Possible Malfunction | Action |
|---|---|---|---|
| **E011** | Developer heater failure | This error occurs when the 8000 CURRENT SENSE BOARD detects no current through the DEVELOPER HEATER. | |
| | | When the temperature of the developer solution is too high, the DEVELOPER HEATER OVERTEMPERATURE THERMOSTAT will open. The THERMOSTAT will reset automatically when the solution cools. | Determine the cause for the high developer temperature, and repair the problem. |
| | | No continuity for the DEVELOPER HEATER | After the HEATER cools, check the continuity. If necessary, install a new HEATER. |
| | | The 5000 BOARD does not energize the RELAY K5004 on the 5000 BOARD. | Check that the LED DS9 on the 5000 BOARD is energized.<br><br>If necessary, install a new BOARD. |
| | | SOLID STATE RELAY U2 that controls the DEVELOPER HEATER | Check U2. |
| | | The 5000 BOARD does not energize the SOLID STATE RELAY U2. | Check that LED DS4 on the 5000 BOARD is energized.<br><br>If necessary, install a new BOARD. |
| | | 8000 BOARD | Install a new BOARD. |
| **E012** | Fixer heater failure | This error occurs when the 8000 CURRENT SENSE BOARD detects no current through the FIXER HEATER. | |
| | | When the temperature of the fixer solution is too high, the FIXER HEATER OVERTEMPERATURE THERMOSTAT will open. The THERMOSTAT will reset automatically when the solution cools. | Determine the cause for the high fixer temperature, and repair the problem. |
| | | No continuity for the FIXER HEATER | After the HEATER cools, check the continuity. If necessary, install a new HEATER. |
| | | SOLID STATE RELAY U5 that controls the FIXER HEATER | Install a new U5. |
| | | The 5000 BOARD does not energize the RELAY K5004 on the 5000 BOARD. | Check that the LED DS9 on the 5000 BOARD is energized.<br><br>If necessary, install a new BOARD. |
| | | The 5000 BOARD does not energize the SOLID STATE RELAY U5. | Check that LED DS1 on the 5000 BOARD is energized.<br><br>If necessary, install a new BOARD. |
| | | 8000 BOARD | Install a new BOARD. |

| Code | Description | Possible Malfunction | Action |
|---|---|---|---|
| **E013** | Level sensor circuit failure | This error occurs when the level sensor circuit on the 5000 BOARD malfunctions. The following parts are disabled:<br>• DEVELOPER and FIXER REPLENISHMENT PUMPS<br>• RECIRCULATION PUMP<br>The temperature control for the fixer and developer is disabled. | |
| | | 5000 BOARD | Install a new BOARD. |
| **E014** | Invalid program software | E014 is displayed on the DEVELOPER TEMPERATURE DISPLAY. This error disables all subsystems, except communications. | |
| | | The main program software in the EEPROM on the 5000 BOARD | Download new software. |
| **E015** | Invalid bootstrap software | The bootstrap software for the PROM U5006 on the 5000 BOARD | Install a new U5006. |
| **E016** | Invalid film accumulator software | This error does not disable any subsystems. The PROCESSOR will remain in the standby mode until the FILM DETECTOR SWITCHES actuate. These SWITCHES provide information about the length of the film. Because the 6000 BOARD does not operate correctly, the PROCESSOR uses the information from the SWITCHES to determine the replenishment rate. | |
| | | The main program software in the EEPROM on the 6000 BOARD | Download new software. |

# Non-Fatal Errors

| Code | Description | Possible Malfunction | Action |
|---|---|---|---|
| **E032** | Developer tank fill error | This error will occur if the:<br>• DEVELOPER TANK:<br>– does not fill in 2 minutes in normal operation<br>– does not fill in 10 minutes in the Tank Fill Mode<br>– is empty and the operator does not select the Tank Fill Mode<br>• REPLENISHER TANK is empty.<br>• REPLENISHMENT HOSE has:<br>– an obstruction<br>– a kink<br>– an air bubble<br>• TANKS of the PROCESSOR are filled with water during the initial installation<br>.<br>The following parts will be disabled:<br>• DEVELOPER REPLENISHMENT PUMP<br>• RECIRCULATION PUMP<br>• temperature control for the fixer and developer<br>To prevent the error from occurring during the initial installation:<br>• Add 240 mL (8 fl oz) of developer to the DEVELOPER TANK before you fill the PROCESSOR with water.<br>• Energize the RECIRCULATION PUMP to move the developer and remove any air bubbles. Use the diagnostics to energize the PUMP. | |
| | | LEVEL PROBES | Clean and check the PROBES. |
| | | The solution level in the REPLENISHER TANK is low. | Mix new developer solution. |
| | | Solution does not flow through the HOSES between the REPLENISHMENT TANK and the REPLENISHMENT PUMP. | Check that the:<br>• HOSE CLAMPS are tight.<br>• HOSES:<br>– are round and opened<br>– have no obstructions or air bubbles |
| | | The DEVELOPER DRAIN VALVE is opened. | Close the VALVE. |
| | | SOLID STATE RELAY U3 that controls the DEVELOPER REPLENISHMENT PUMP | Check U3. |
| | | POPPET VALVES in the DEVELOPER REPLENISHMENT PUMP | Clean and check the VALVES. |
| | | DEVELOPER REPLENISHMENT PUMP | Check the REPLENISHMENT PUMP MOTOR B3. |
| | | The 5000 BOARD does not energize the SOLID STATE RELAY U3. | Check that LED DS3 on the 5000 BOARD is energized.<br><br>If necessary, install a new BOARD. |

<table>
<tr><th>Code</th><th>Description</th><th>Possible Malfunction</th><th>Action</th></tr>
<tr><td>E033</td><td>Fixer tank fill error</td><td colspan="2">This error will occur if the:<br>• FIXER TANK<br>– does not fill in 2 minutes in normal operation<br>– does not fill in 10 minutes in the Tank Fill Mode<br>– is empty and the operator does not select the Tank Fill Mode<br>• REPLENISHMENT TANK is empty.<br>• REPLENISHMENT HOSE has:<br>– an obstruction<br>– a kink<br>– an air bubble<br>• TANKS of the PROCESSOR are filled with water during the initial installation<br>.<br>The following parts will be disabled:<br>• FIXER REPLENISHMENT PUMP<br>• RECIRCULATION PUMP<br>• temperature control for the fixer and developer<br>To prevent the error from occuring during the initial installation:<br>• Add 240 mL (8 fl oz) of fixer to the FIXER TANK before you fill the PROCESSOR with water.<br>• Energize the RECIRCULATION PUMP to move the fixer and remove any air bubbles. Use the diagnostics to energize the PUMP.</td></tr>
<tr><td></td><td></td><td>LEVEL PROBES</td><td>Clean and check the PROBES.</td></tr>
<tr><td></td><td></td><td>The solution level in the REPLENISHER TANK is low.</td><td>Mix new fixer solution.</td></tr>
<tr><td></td><td></td><td>Solution does not flow through the HOSES between the REPLENISHMENT TANK and the REPLENISHMENT PUMP.</td><td>Check that the:<br>• HOSE CLAMPS are tight.<br>• HOSES:<br>– are round and opened<br>– have no obstructions or air bubbles</td></tr>
<tr><td></td><td></td><td>The FIXER DRAIN VALVE is opened.</td><td>Close the VALVE.</td></tr>
<tr><td></td><td></td><td>SOLID STATE RELAY U4 that controls the FIXER REPLENISHMENT PUMP</td><td>Check U4.</td></tr>
<tr><td></td><td></td><td>POPPET VALVES in the FIXER REPLENISHMENT PUMP</td><td>Clean and check the VALVES.</td></tr>
<tr><td></td><td></td><td>FIXER REPLENISHMENT PUMP</td><td>Check the REPLENISHMENT PUMP MOTOR B4.</td></tr>
<tr><td></td><td></td><td>The 5000 BOARD does not energize the SOLID STATE RELAY U4.</td><td>Check that LED DS2 on the 5000 BOARD is energized.<br><br>If necessary, install a new BOARD.</td></tr>
</table>

| Code | Description | Possible Malfunction | Action |
|---|---|---|---|
| **E038** | Loss of developer cooling ability | Water does not enter the WASH TANK. | Check:<br>• that water is supplied to the PROCESSOR<br>– The water supply is turned on.<br>– The FILTER is clean.<br>• WASH WATER SOLENOID L1<br>– The operation is correct.<br>– The SCREEN has no obstructions.<br>• COOLING/DRAIN SOLENOID L2 |
| | | The temperature of the water entering the WASH TANK is too hot. | Decrease the temperature of the water supply. The wash water must be a minimum of 5.5°C (10°F) below the setpoint of the developer. |
| | | HEAT EXCHANGER in the DEVELOPER TANK | Remove any obstructions from the EXCHANGER. |
| | | The 5000 BOARD does not energize the SOLENOID L1 or de-energize the SOLENOID L2. | Check for 24 V DC at TERMINALS 1 and 2 on the WASH WATER SOLENOID L1.<br><br>Check that 24 V DC is not present at TERMINALS 1 and 2 for the COOLING/DRAIN SOLENOID L2.<br><br>If necessary, install a new BOARD. |
| | | RECIRCULATION PUMP | Check the RECIRCULATION PUMP MOTOR B5. If necessary, install a new PUMP. |
| **E040** | Loss of dryer heating ability | A PANEL is not installed. | Install the PANEL. |
| | | DRYER OVERTEMPERATURE THERMOSTAT | Reset the THERMOSTAT. If the THERMOSTAT opens again, determine the cause of the high temperature. If you cannot determine the cause of the problem, install a new THERMOSTAT. |
| | | SOLID STATE RELAY U1 that controls the DRYER HEATER | Check U1. |
| | | No continuity for the DRYER HEATER | Check that the resistance at 25°C (77°F) is approximately 18 W. |
| | | The 5000 BOARD does not energize the SOLID STATE RELAY U1. | Check that LED DS5 on the 5000 BOARD is energized.<br><br>If necessary, install a new BOARD. |

<table>
<tr><th>Code</th><th>Description</th><th>Possible Malfunction</th><th>Action</th></tr>
<tr><td rowspan="5">E041</td><td rowspan="5">Loss of transport speed control<br><br>Note<br>This error occurs when the transport speed is adjusted for 10 seconds and the speed is not within 7.6 cm/min (3 in./min) of the setpoint.</td><td colspan="2">When the PROCESSOR operates normally:<br>• The supply voltage from the +24 V POWER SUPPLY PS3 to the PCOM and +24 V TERMINALS of the DRIVE MOTOR CONTROLLER A4 is 24 V DC.<br>• The control voltage to TERMINALS 4 and 6 on the DRIVE MOTOR CONTROLLER A4 is approximately:<br>– 0.85 V DC for the Extended Speed<br>– 1.55 V DC for the Standard Speed<br>– 2.25 V DC for the Rapid Speed<br>– 3.00 V DC for the K/RA Speed<br>• Feedback pulses from the DRIVE MOTOR CONTROLLER A4 at Test Point MOTFB on the 5000 BOARD indicate the speed of the DRIVE MOTOR.<br>If the transport operates slower than the set speed, the MICROPROCESSOR increases the control voltage approximately 25 mV every second at TERMINALS 4 and 6 on the DRIVE MOTOR CONTROLLER A4. If the voltage reaches 5 V DC, the MICROPROCESSOR stops increasing the voltage. When you check the voltage, if it is:<br>• 5 V DC, check for mechanical malfunctions.<br>• 0, check the wiring and the CONNECTOR.</td></tr>
<tr><td>5000 BOARD</td><td>If the control voltage is not correct at TERMINALS 4 and 6 of the DRIVE MOTOR CONTROLLER A4, install a new BOARD.</td></tr>
<tr><td>DC DRIVE MOTOR B6 or DRIVE MOTOR CONTROLLER A4</td><td>If B6 operates, but no pulses occur at Test Point MOTFB on the 5000 BOARD or if the supply voltage and the control voltage to the CONTROLLER are not correct, check:<br>• B6<br>• A4</td></tr>
<tr><td rowspan="3">E042</td><td rowspan="3">Loss of accessory data link</td><td>Loose connections</td><td>Check all connections between any accessory and the PROCESSOR.</td></tr>
<tr><td>5000 BOARD</td><td>Install a new BOARD.</td></tr>
<tr><td>2000 BOARD</td><td>Install a new BOARD.</td></tr>
<tr><td>E045</td><td>Display data link error</td><td>CABLES between the 3000 and 5000 BOARD</td><td>Check the CABLES.</td></tr>
</table>

# Warnings

| Error Code | Error Description | Possible Malfunction | Action |
|---|---|---|---|
| **E128** | Top cover not in place | When this error occurs, the following functions are disabled:<br>• film transport<br>• film accumulation | |
| | | The TOP COVER is opened. | Close the TOP COVER. |
| | | INTERLOCK SWITCHES S3 and S4<br>• MAGNETS | Check S3 and S4. If necessary, install a new SWITCH or MAGNET. |
| | | 7000 BOARD | Install a new BOARD. |
| **E129** | Tanks currently being filled | When this error occurs,<br>• the following functions are disabled:<br>– film transport<br>– film accumulation<br>• the following parts are disabled:<br>– RECIRCULATION PUMP<br>– 3 HEATERS | |
| | | None | None. This message will clear automatically. |
| **E130** | Replenish pumps disabled | None | Use the KEYPAD to select either Automatic or Flooded Replenishment to enable the PUMPS. |
| **E132** | Developer under set temperature | None | None. This message will clear automatically when the developer reaches the setpoint temperature. |
| **E133** | Developer over set temperature | None | None. This message will clear automatically when the developer reaches the setpoint temperature. |
| **E134** | Dryer under set temperature | None | None. This message will clear automatically when the DRYER reaches the setpoint temperature. |
| **E137** | Film accumulator LED error | 6000 BOARD | Check that no chemical deposits are on the PROTECTIVE COVER for the BOARD.<br><br>De-energize and energize the PROCESSOR to reset the:<br>• MICROPROCESSOR on the 5000 BOARD<br>• MICROPROCESSOR on the 6000 BOARD<br><br>Check the BOARD. Use the internal diagnostics. If necessary, install a new BOARD. |
| **E141** | Low developer tank level | When this error occurs, the:<br>• RECIRCULATION PUMP is disabled<br>• temperature control for the fixer and developer is disabled | |
| | | None | None. This error will clear automatically when the developer solution reaches the correct level. |
| **E142** | Low fixer tank level | When this error occurs, the:<br>• RECIRCULATION PUMP is disabled<br>• temperature control for the fixer and developer is disabled | |
| | | None | None. This error will clear automatically when the fixer solution reaches the correct level. |

# Section 2: Mechanical Diagnostics

## Transport Malfunction

| Possible Cause | Check |
|---|---|
| RACK and CROSSOVER ASSEMBLIES | RACK and CROSSOVER ASSEMBLIES:<br>correct positions<br>seated correctly<br>• squareness<br>– See the Adjustments and Replacements, Publication No. 5B6340, RACKS and CROSSOVERS.<br>Adjusting the Squareness of the CROSSOVERS<br>Adjusting the Squareness of the RACKS<br>• cleaned completely<br>– See the Preventive Maintenance, Publication No. 5B6747.<br>CROSSOVER TROUGHS<br>• correct positions |
| ROLLER ASSEMBLIES | ROLLERS<br>• correct positions<br>• rotate freely<br>• GUDGEONS<br>– no damage<br>– If necessary, install new ROLLERS.<br>GEARS, SPROCKETS, and IDLERS<br>• engage correctly<br>• not broken or worn<br>BEARINGS<br>• no wear<br>SPRINGS and E-RINGS<br>• not broken or missing<br>RACK ASSEMBLY<br>• DRIVE CHAIN<br>– tension |
| DRYER | AIR TUBE BAFFLES<br>• installed<br>Temperature setting of the DRYER<br>lowest possible setting to provide the best image quality<br>•<br>DRYER ROLLERS and AIR TUBES<br>• seated correctly<br>DRYER BELT<br>• moves correctly |
| TOP COVER | TOP COVER<br>• closed |

# Artifacts and Wrong Film Densities

| Possible Cause | Check |
|---|---|
| Replenishment system | Replenishment rates<br>• correct setting<br>HOSES<br>• opened and round<br>• no obstructions or air bubbles<br>HOSE CLAMPS<br>• tight<br>REPLENISHMENT PUMP<br>• operation<br>• calibration<br>Replenishment chemicals<br>• Change any chemicals that are:<br>– not mixed correctly<br>– exhausted<br>– contaminated<br>**Note**<br>When you mix chemicals:<br>• Mix a maximum of a 2-week supply of the DEVELOPER RELENISHER.<br>• Follow all directions for mixing chemicals and solutions.<br>• Use a SPLASH GUARD and DRIP TRAY when you remove the FIXER RACK from the PROCESSOR to prevent contamination of the developer.<br>DEVELOPER and FIXER TANKS<br>• DRAIN VALVES<br>– completely closed |
| Recirculation system | DEVELOPER and RECIRCULATION HOSES<br>• ORIFICES<br>– no obstructions<br>DEVELOPER FILTER<br>• If necessary, install a new FILTER.<br>Movement of the solutions at the surface of the PROCESSOR TANKS when you enrgize the PROCESSOR and the TANKS are full.<br>• If the solutions do not move, check that the:<br>– HOSES have no obstructions or air bubbles in the recirculation system<br>– RECIRCULATION PUMP operates<br>– DEVELOPER FILTER is clean and in the correct position |

| Possible Cause | Check |
|---|---|
| RACK and CROSSOVER ASSEMBLIES | RACKS and CROSSOVERS<br>• correct position<br>• seated correctly<br>• cleaned completely<br>– See the Preventive Maintenance, Publication No. 5B6747.<br>CROSSOVER TROUGHS and EVAPORATION COVERS<br>• correct position<br>• TROUGHS<br>– clean<br>• TROUGH DRAINS<br>– no obstructions<br>• CROSSOVER YOKE<br>– correct position |
| ROLLERS | ROLLERS<br>• clean and not scratched<br>• correct position<br>• rotate freely<br>• GUDGEONS<br>– no damage<br>– If necessary, install new ROLLERS.<br>DETECTOR ROLLERS<br>• clean<br>GEARS, SPROCKETS, and IDLERS<br>• engage correctly<br>• no wear<br>BEARINGS<br>• no wear<br>SPRINGS<br>• not broken or missing<br>DEVELOPER and FIXER RACK ASSEMBLIES<br>• ROLLER SPROCKETS<br>– engage correctly<br>• DRIVE CHAINS<br>– correct adjustment of the tension |

| Possible Cause | Check |
|---|---|
| Drying system | DRYER AIR TUBES<br>• clean<br>– If necessary, use a BOTTLE BRUSH and water to clean the TUBES and SLOTS in the TUBES.<br>• BAFFLES<br>– installed<br>Temperature setting of the DRYER<br>• lowest possible setting to provide the best image quality<br>• exhaust for the PROCESSOR<br>– meets the specifications<br>– See the Site Specifications, Publication No. 5B6338. |
| Wrong water temperature | Temperature of the water<br>• 4.5 - 29.5˚C (40 - 85˚F) |
| Wash water | WASH TANK and CROSSOVER TROUGH<br>• Water flows into these parts |
| COVERS and PANELS | TOP COVER<br>• closed<br>ACCESS PANEL<br>• installed<br>EVAPORATION COVERS<br>correct position<br>• |
| Ventilation system | Exhaust for the PROCESSOR<br>• meets the specifications<br>• See the Site Specifications, Publication No. 5B6338.<br>• Internal EXHAUST FAN operates correctly<br>External EXHAUST HOSE<br>• connected from the AIR EXHAUST on the PROCESSOR to the BUILDING EXHAUST<br>Internal EXHAUST HOSE<br>• connected from the internal EXHAUST FAN to the AIR EXHAUST |

# Wet Films

| Possible Cause | Check |
|---|---|
| Film and chemicals are not compatible. | Film<br>• compatible with the selected cycle |
| Replenishment system | Replenishment rates<br>• correct setting<br>HOSES<br>• opened and round<br>• no obstructions or air bubbles<br>HOSE CLAMPS<br>• tight<br>REPLENISHMENT PUMP<br>• operation<br>• calibration<br>Replenishment chemicals<br>• Change any chemicals that are:<br>– not mixed correctly<br>– exhausted<br>– contaminated<br>**Note**<br>When you mix chemicals:<br>• Mix a maximum of a 2-week supply of the DEVELOPER RELENISHER.<br>• Follow all directions for mixing chemicals and solutions.<br>• Use a SPLASH GUARD and DRIP TRAY when you remove the FIXER RACK from the PROCESSOR to prevent contamination of the developer.<br>REPLENISHMENT TANKS<br>• quantity of solution<br>DEVELOPER and FIXER TANKS<br>• DRAIN VALVES<br>– completely closed |
| Recirculation system | Movement of the solutions at the surface of the PROCESSOR TANKS when you energize the PROCESSOR and the TANKS are full.<br>• If the solutions do not move, check that the:<br>– HOSES have no obstructions or air bubbles in the recirculation system<br>– RECIRCULATION PUMP operates<br>– DEVELOPER FILTER is clean and in the correct position |

| Possible Cause | Check |
|---|---|
| Drying system | DRYER AIR TUBES<br>• clean<br>– If necessary, use a BOTTLE BRUSH and water to clean the TUBES and SLOTS in the TUBES.<br>• BAFFLES<br>– installed<br>DRYER<br>• lowest possible temperature to provide the best image quality<br>DRYER AIR EXHAUST<br>• no obstructions<br>• installed correctly<br>– If necessary, see the Installation Instructions, Publication No. 5B6339.<br>DRYER HEATER<br>• operates correctly<br>DRYER ROLLERS and AIR TUBES<br>• seated correctly |
| Wash water | Water<br>• input to the WASH TANK<br>• temperature<br>• input to the CROSSOVER TROUGHS<br>– is connected |
| RACK and CROSSOVER ASSEMBLIES | WASH RACK<br>• SQUEEGEE ROLLERS<br>– clean<br>– good condition<br>SPRINGS<br>• not broken or missing<br>SQUEEGEE ASSEMBLY<br>• operates correctly<br>• ROLLERS<br>– clean<br>– good condition<br>• SPRINGS<br>– correct tension<br>YOKE and CROSSOVER TROUGHS<br>• installed correctly<br>CROSSOVER TROUGHS<br>holes are<br>• opened<br>– If necessary, clean the holes to prevent an overflow of the water from the TROUGHS into the DEVELOPER and FIXER TANKS. |

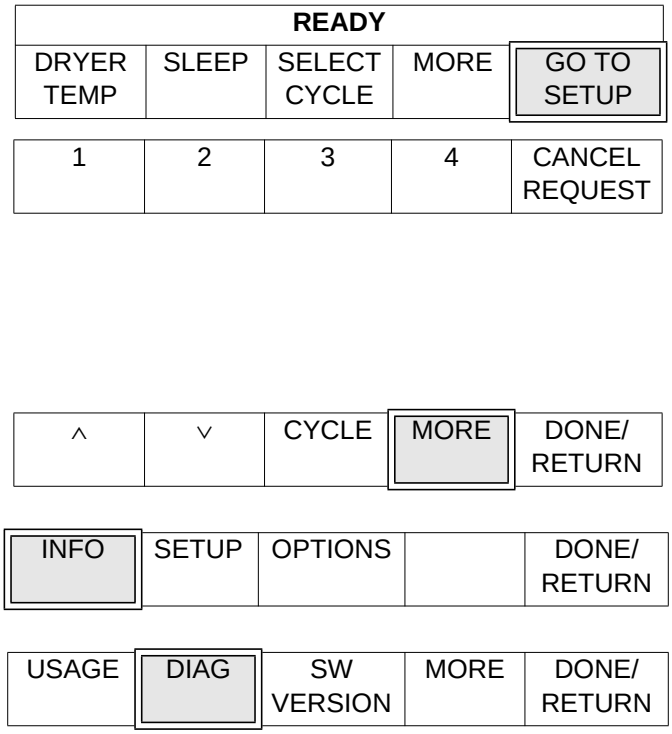
# Solution Levels

| Possible Cause | Check |
|---|---|
| Replenishment system | Replenishment rates<br>• correct setting<br>HOSES<br>• opened and round<br>• no obstructions or air bubbles<br>REPLENISHMENT PUMP<br>• operation<br>• calibration<br>REPLENISHMENT TANKS<br>• quantity of solution<br>POPPET VALVES<br>• clean<br>• no damage<br>DEVELOPER and FIXER TANKS<br>• DRAIN VALVES<br>– no leakage<br>CROSSOVER TROUGHS<br>• correct positions<br>• TROUGHS<br>– clean<br>• TROUGH DRAINS<br>– no obstructions |

# Section 3: Internal Diagnostics

## Accessing the Internal Diagnostics

### Procedure




**[1]** Press “GO TO SETUP” from the main menu.

**[2]** Enter the access code. If the customer:

- has not changed the code, it is 4213.
- has changed the code, see the Adjustments and Replacements, Publication No. 5B6340, Electrical, Resetting or Bypassing the Access Code.

**[3]** Press “MORE”.

**[4]** Press “INFO”.

**[5]** Press “DIAG” to display the first diagnostic menu. Advance to the next page to see the 3 diagnostic menus.

In addition to accessing the first diagnostic menu from this screen, you can access additional screens that will enable you to access more information about the PROCESSOR. Select:

- “USAGE” to access information about the type and quantity of film and chemicals used in the PROCESSOR
- “SW VERSION” to access the software version number for the following programs for the 5000 and 6000 BOARDS:
  - Boot program
  - Main program
- “MORE” to access the total number of hours the:
  - PROCESSOR has been energized
  - DRIVE MOTOR has been energized
- “DONE/RETURN” repeatedly to return to the main menu

**D1 Menu**

| | | | | |
|---|---|---|---|---|
| VIEW ERRORS | FILM DETECT | SENSOR TESTS | MORE | DONE/ RETURN |

**[6]** Press “MORE” to display the D2 Menu.

**D2 Menu**

| | | | | |
|---|---|---|---|---|
| HEATER TESTS | SOLENOID TESTS | MOTOR TESTS | MORE | DONE/ RETURN |

**[7]** Press “MORE” to display the D3 Menu.

**D3 Menu**

| | | | | |
|---|---|---|---|---|
| PUMP TESTS | RECEPT OUTLET | FILM ACCUMUL | MORE | DONE/ RETURN |

**[8]** Press “MORE” to return to the first diagnostic menu.

# Diagnostic Menus

## Overview

When you enter the diagnostic menu, the software:

- de-energizes the following electrical components:
  - all HEATERS
  - all PUMPS
  - all SOLENOIDS
  - the BLOWER and DRIVE MOTORS
- de-energizes the SAFELIGHT OUTLET
- disables the error code detection

You can use the internal diagnostics to energize and de-energize electrical components. When you energize a component, it will automatically de-energize in 4 minutes.

## Details

To view the specific options that are available from the D1, D2, and D3 Menus, see the Flowcharts for the Internal Diagnostics on the following pages.

## Menus

### D1 Menu

| | | | | |
|---|---|---|---|---|
| VIEW ERRORS | FILM DETECT | SENSOR TESTS | MORE | DONE/ RETURN |

From the first menu, you can:

- access History and Frequency Error Logs
- monitor FILM DETECTOR SWITCHES
- monitor SENSORS
- access the D2 Menu
- return to the main menu

### D2 Menu

| | | | | |
|---|---|---|---|---|
| HEATER TESTS | SOLENOID TESTS | MOTOR TESTS | MORE | DONE/ RETURN |

From this menu, you can:

- energize and de-energize:
  - HEATERS
  - SOLENOIDS
  - MOTORS
- access the D3 Menu
- return to the main menu

**Note**

When you energize the HEATERS, energize the RECIRCULATION PUMPS, too, to prevent the OVERTEMPERATURE THERMOSTAT from opening.

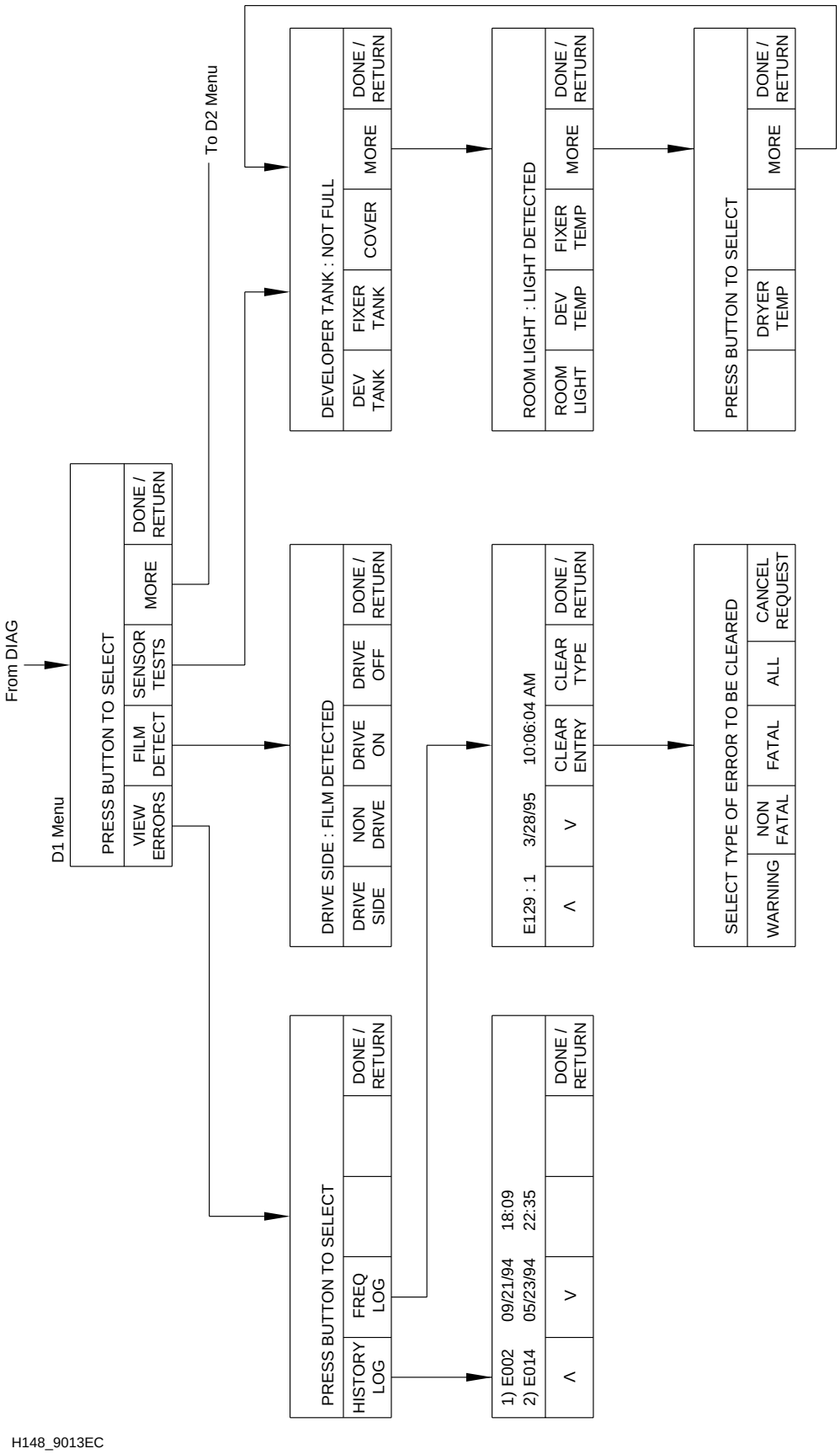
## D3 Menu

| | | | | |
|---|---|---|---|---|
| PUMP TESTS | RECEPT OUTLET | FILM ACCUMUL | MORE | DONE/ RETURN |

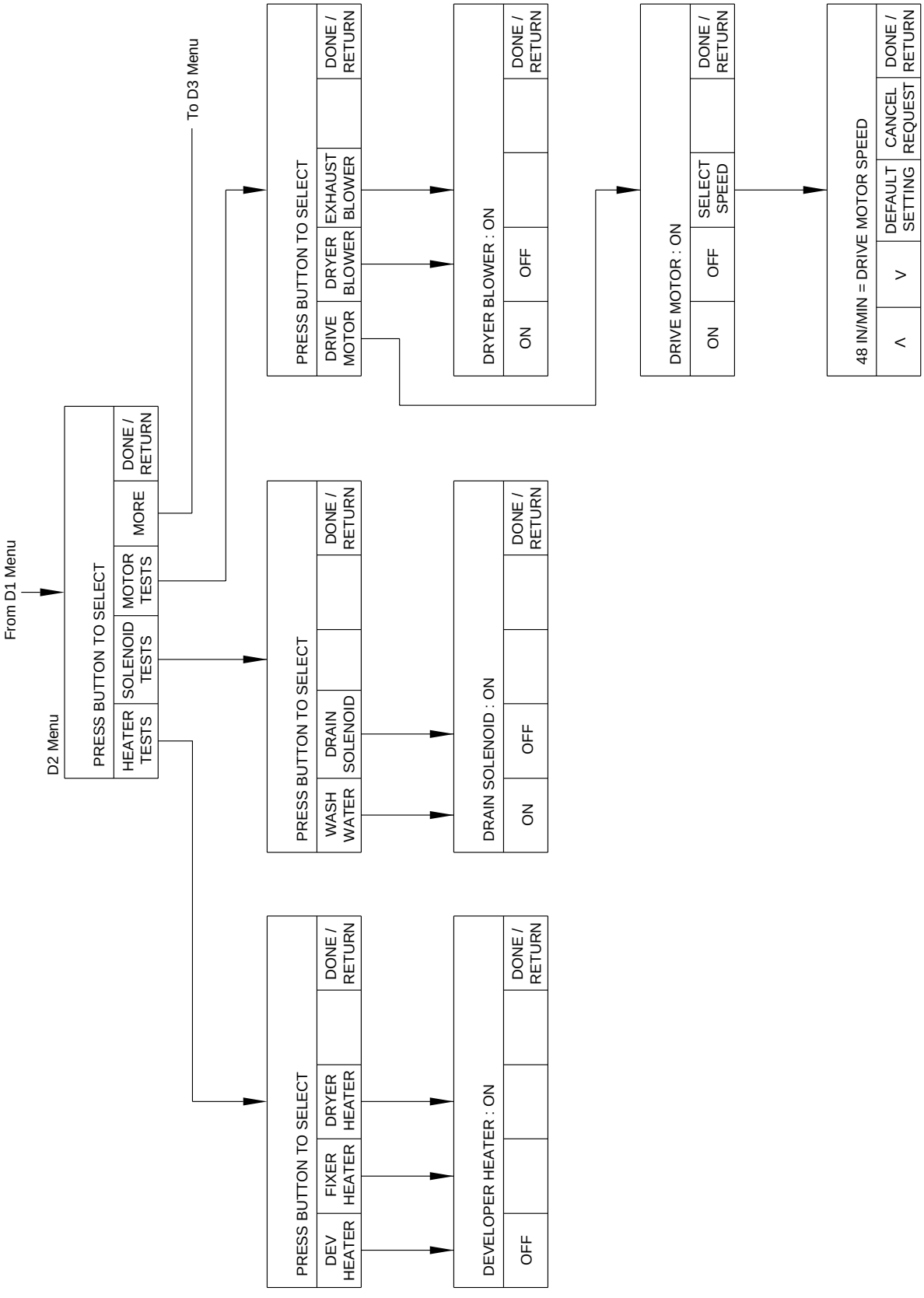
From this menu, you can:

- energize and de-energize:
  - PUMPS
  - RECEPTACLE OUTLET
  - LEDs
- calibrate LEDs on the 6000 BOARD
- determine film size
- access the D1 Menu
- return to the main menu

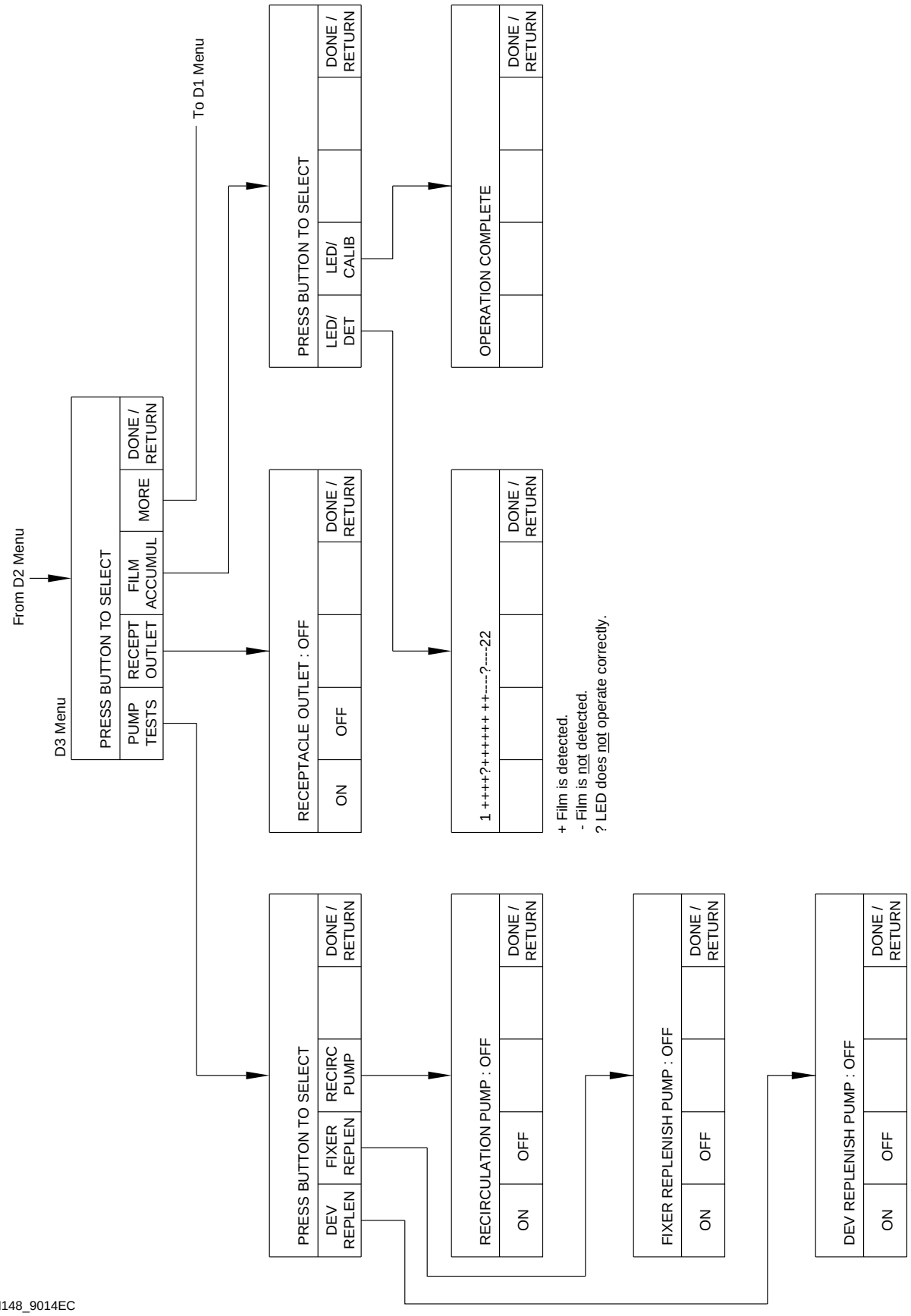
# Flowcharts for the Internal Diagnostics




H148_9013EC


From D1 Menu
D2 Menu
PRESS BUTTON TO SELECT
HEATER TESTS
SOLENOID TESTS
MOTOR TESTS
MORE
DONE / RETURN
To D3 Menu
PRESS BUTTON TO SELECT
DEV HEATER
FIXER HEATER
DRYER HEATER
DONE / RETURN
DEVELOPER HEATER : ON
OFF
DONE / RETURN
PRESS BUTTON TO SELECT
WASH WATER
DRAIN SOLENOID
DONE / RETURN
DRAIN SOLENOID : ON
ON
OFF
DONE / RETURN
PRESS BUTTON TO SELECT
DRIVE MOTOR
DRYER BLOWER
EXHAUST BLOWER
DONE / RETURN
DRYER BLOWER : ON
ON
OFF
DONE / RETURN
DRIVE MOTOR : ON
ON
OFF
SELECT SPEED
DONE / RETURN
48 IN/MIN = DRIVE MOTOR SPEED
^
V
DEFAULT SETTING
CANCEL REQUEST
DONE / RETURN

H148_9015EC


From D2 Menu
D3 Menu
To D1 Menu
PRESS BUTTON TO SELECT
PUMP TESTS
RECEPT OUTLET
FILM ACCUMUL
MORE
DONE / RETURN
RECEPTACLE OUTLET : OFF
ON
OFF
DONE / RETURN
PRESS BUTTON TO SELECT
LED/ DET
LED/ CALIB
DONE / RETURN
OPERATION COMPLETE
DONE / RETURN
1 ++++?+++++ ++----?---22
DONE / RETURN
+ Film is detected.
- Film is not detected.
? LED does not operate correctly.
PRESS BUTTON TO SELECT
DEV REPLEN
FIXER REPLEN
RECIRC PUMP
DONE / RETURN
RECIRCULATION PUMP : OFF
ON
OFF
DONE / RETURN
FIXER REPLENISH PUMP : OFF
ON
OFF
DONE / RETURN
DEV REPLENISH PUMP : OFF
ON
OFF
DONE / RETURN
H148_9014EC

# Section 4: Reports

## Overview

### Options

The equipment software enables you to use a PRINTER to obtain copies of the following reports.

- A Status Report, which includes information about:
  - Processing Parameters
  - Options
  - Automatic Starting and Stopping Times
  - Software Versions
  - Miscellaneous Information
- A Usage Report, which includes information about the use of:
  - Film
  - Chemicals
- A Log Report, which provides information about errors in 2 formats:
  - Frequency
  - History

### Requirements

You must have the following components to print reports:

- CABLES
  - PRINTER ADAPTER CABLE TL-5004
  - INTERFACE CABLE TL-4391
- PRINTER with the following specifications:
  - 9600 baud
  - 8 data bits
  - no parity
  - serial interface
  - XON/XOFF protocol

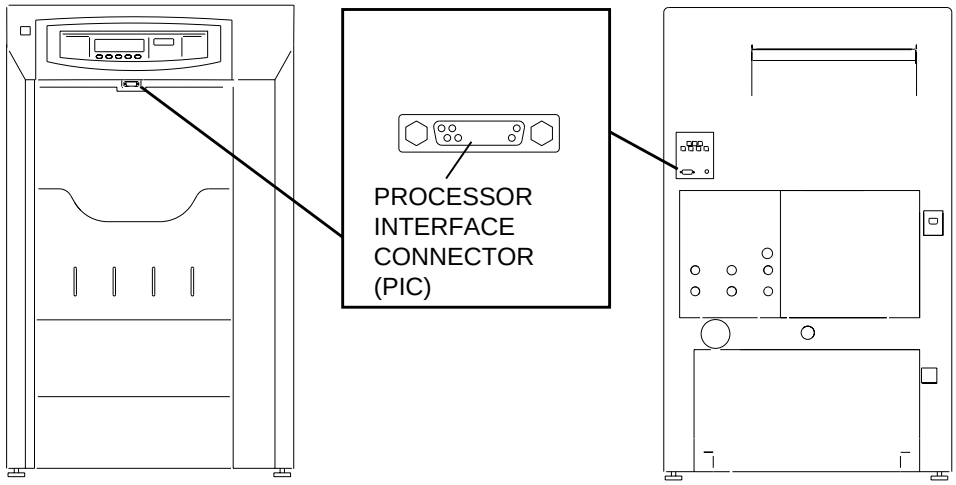
The *Kodak Diconix* 180si PRINTER meets these specifications.

# Printing Reports

## Procedure

**[1]** Connect:

- the INTERFACE CABLE TL-4391 to the PROCESSOR INTERFACE CONNECTOR (PIC) on either the DRYER END or the FEED END of the PROCESSOR
- the PRINTER ADAPTER CABLE TL-5004 to the INTERFACE CABLE TL-4391 and the PRINTER

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H148_0174BA

| READY | | | | |
|---|---|---|---|---|
| DRYER TEMP | SLEEP | SELECT CYCLE | MORE | GO TO SETUP |

**[2]** Press “GO TO SETUP” from the main menu.

| | | | | |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | CANCEL REQUEST |

**[3]** Enter the access code.

| | | | | |
|---|---|---|---|---|
| ^ | v | CYCLE | MORE | DONE/ RETURN |

**[4]** Press “MORE”.

| | | | | |
|---|---|---|---|---|
| INFO | SETUP | OPTIONS | | DONE/ RETURN |

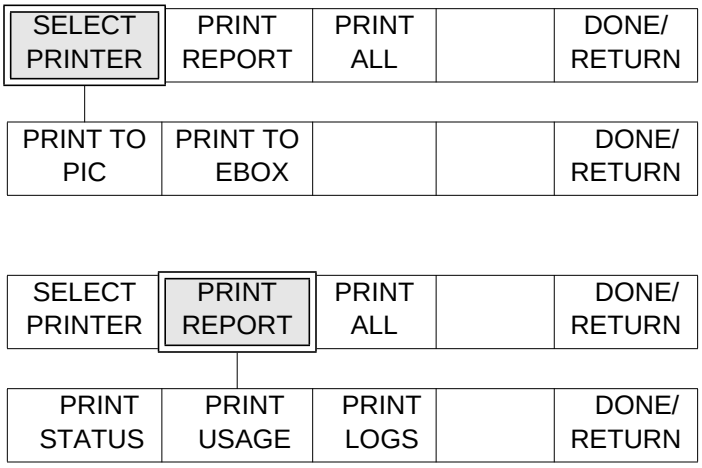
**[5]** Press “INFO”.

| | | | | |
|---|---|---|---|---|
| USAGE | DIAG | SW VERSION | MORE | DONE/ RETURN |

**[6]** Press “MORE” to access the options for the printer.

| | | | | |
|---|---|---|---|---|
| PROC HOURS | PRINTER | | MORE | DONE/ RETURN |

**[7]** Press “PRINTER” to access the options for the printer.




**[8]** From this screen, you can:

- Press “SELECT PRINTER” to indicate which connection you used in Step 1:
  - PROCESSOR INTERFACE CONNECTOR (PIC)
  - ELECTRICAL BOX (EBOX)
- Press “PRINT REPORT” to select which reports you want to print:
  - Status
  - Usage
  - Log
- Press “PRINT ALL” to print all the reports at once.
- Press “DONE/RETURN” repeatedly to return to the main menu.

# Section 5: Appendix

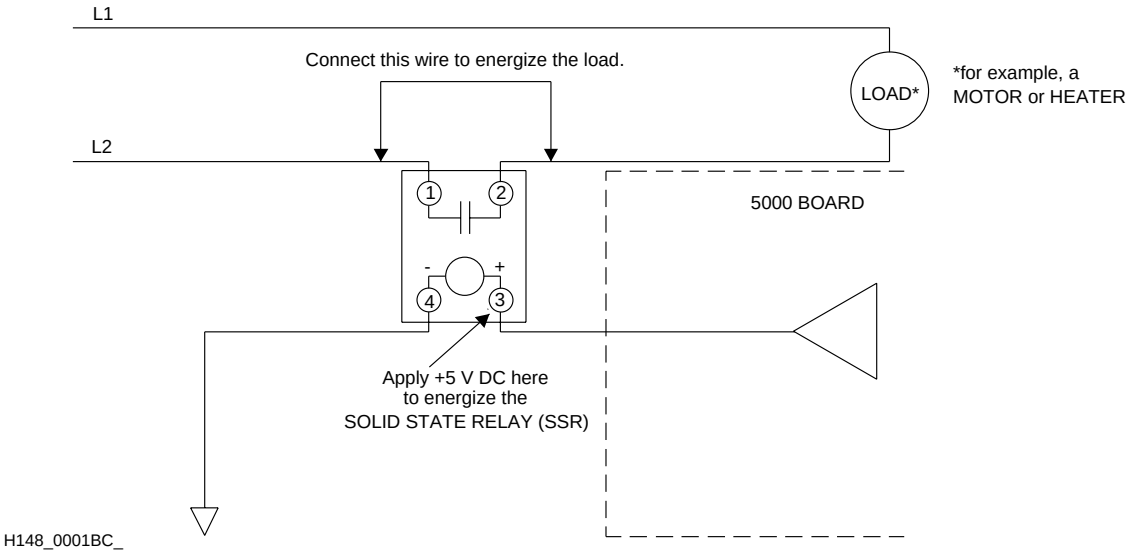
## SOLID STATE RELAYS (SSR)

### Possible Malfunctions

3 possible malfunctions can occur:

- The control voltage is supplied, but the LOAD does not operate.
  - – Result: The LOAD malfunctions.
- The control voltage is supplied, but the SSR does not conduct the voltage.
  - – Result: The SSR malfunctions.
- The 5000 BOARD does not receive the supply voltage at the correct time.
  - – Result: The 5000 BOARD malfunctions.

Use the following procedures to determine which component malfunctions.




### Checking the LOAD

**Warning**
Dangerous Voltage

**[1]** De-energize the PROCESSOR.

**[2]** Place a CLIP between TERMINALS 1 and 2 on the SSR.

**[3]** Energize the PROCESSOR

**[4]** If the LOAD:

- operates, the LOAD is not the problem.
- does not operate, install a new LOAD.

**[5]** De-energize the PROCESSOR.

**[6]** Remove the CLIP.

## Checking the SSR and the 5000 BOARD

**Warning**

Dangerous Voltage

**[1]** De-energize the PROCESSOR.

**[2]** Disconnect the wire that connects the 5000 BOARD to TERMINAL 3 on the SSR.

**[3]** Place a CLIP between:

- +5 V DC on the QUAD POWER SUPPLY
- TERMINAL 3 on the SSR

**[4]** Energize the PROCESSOR.

**[5]** If the LOAD:

- operates, install a new 5000 BOARD.
- does not operate, install a new SSR.

**[6]** De-energize the PROCESSOR.

**[7]** Remove the CLIP.

# Section 6: Publication History

| Print Date | Pub. No. | ECO No. | Affected Pages | File Name | Notes |
|---|---|---|---|---|---|
| October 1995 | 5B6342 | 2649-029 | All | dg3425_1_029.doc | First printing. |
| January 1996 | 5B6342 | 2649-062 | Covers | dg3425_1_062.doc | Graphic Unification. |
| January 1998 | 5B6342 | 2649-062 | All | dg342500.fm | First CD-ROM printing. Content is identical to January 1996 version; formatting may vary from print version. |

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dg342500.fm

Printed In USA

**HEALTH IMAGING**

EASTMAN KODAK COMPANY ● ROCHESTER, N.Y. 14650